

REMARKS

The Office Action objected to claims 27-29 and 30-33. The Office Action rejected claims 18-24 and 26-52 under 35 U.S.C. § 112. The Office Action rejected claims 18-24, 26-40, 43-44, 47-48, and 50-51 under 35 U.S.C. § 103(a) as being unpatentable over United States Patent 6,451,075 issued to Schoppe et al. ("Schoppe") in view of United States Patent 3,224,848 issued to Henderson ("Henderson"). The Office Action rejected claim 41 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of Henderson, in further view of Warnatz et al. (2001, Springer, 3rd ed., p. 228) ("Warnatz"). The Office Action rejected claim 49 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of Henderson in further view of U.S. Patent 6,183,703 issued to Hsu et al. ("Hsu"). The Office Action also rejected claims 18-23, 27-48, and 52 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of U.S. Patent 2,407,717 issued to Marschner ("Marschner"). The Office Action also rejected claim 41 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of Marschner in further view of Warnatz. The Office Action also rejected claim 49 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of Marschner in further view of Ethyl corporation (Aviation Fuels and their effects on Engine performance, 1951) ("Corporation") in still further view of Hsu. The Office Action stated that the IDS filed on 04/23/09 failed to comply with 37 CFR 1.98(a)(2) as it was missing a copy of foreign patent application FR 2830259. Applicants respectfully submit that a copy of this document was submitted with the IDS and may be found as the second Foreign Reference listed on PAIR on 04/23/09.

In this Amendment, Applicants have amended claims 18, 19, 26, 29, 31, 32, 34, 38-41, and 47-49. Applicants have canceled claims 24, 27, 28, 30, 33, and 42. Applicants have added new claim 53. Applicants do not surrender any equivalents to any amended limitation or elements of any claim.

Accordingly, claims 18-23, 26, 29, 31, 32, 34-41, and 43-53 will be pending after entry of this Amendment. Applicants respectfully request reconsideration of the rejections.

I. Objection to Claims 27-29 under 37 CFR 1.75(c)

The Office Action rejected claims 27-29 as failing to further limit claim 18. Applicants have canceled claims 27 and 28 and amended claims which depended from them accordingly. Applicants have amended claim 29 to clarify that the recited “43%” referred to the percentage of cut B1 in the fuel rather than the percentage of isooctanes in the B1 cut. Therefore, Applicants respectfully request that the objections be withdrawn.

II. Objection to Claims 30-33 under 37 CFR 1.75(c)

The Office Action rejected claims 30-33 as failing to further limit the subject matter of a previous claim. Applicants have canceled claims 30 and 33 and amended claims which depended from them accordingly.

For clarity, Applicants have amended claim 18 to reflect that in some embodiments, the B1 cut contains 70% of isoparaffins with eight carbon atoms (potentially including any isomers of isoparaffin with eight carbon atoms, not specifically restricted to 2,2,4-trimethylpentane) and has amended claims 31-32 to recite “isooctane” rather than “isooctanes” to clarify that those claims refer to only one isomer.

Applicants respectfully submit that one of ordinary skill in the art will understand that in claims 31-33, “isooctane” refers to a particular isomer of an isoparaffin with eight carbon atoms. Specifically, in claims 31-33 “isooctane” refers to 2,2,4-trimethylpentane (commonly called “isooctane”). Applicants respectfully submit that this is consistent with the claims originally filed. In the original claims, claim 1 recited “base (B1) essentially constituted by isoparaffins comprising 6 to 9 carbon atoms”. Original claim 5 depended from claim 1 and recited “(B1) is essentially constituted

by isoparaffins with eight carbon atoms”. Original claim 7 recited that “the isoparaffinic hydrocarbons containing eight carbon atoms are isooctanes”.

Accordingly, as claim 18 recites “isoparaffins with eight carbon atoms” and claim 31 is limited to isooctane (2,2,4-trimethylpentane) and not any other “isoparaffins with eight carbon atoms”, claims 31-32 provide further limitations of their parent claims. Therefore, Applicants respectfully request that the objections be withdrawn.

III. Rejection of Claims 18-24 and 26-52 Under § 112, 2nd paragraph and New Claim 53

The Office Action rejected claims 18-24 and 26-52 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the Office Action cited claim 18 as providing an optional limitation that made it unclear what subject matter was claimed in claim 18. Applicants have amended claim 18 to remove the cited phrase. Applicants have added dependent claim 53 to claim some of the optional limitations that were eliminated from claim 18. Applicant has not included the phrase “in a quantity and quality sufficient for the fuel to comply with the specifications in force” in new claim 53. Applicants respectfully submit that claim 53 is fully supported by the specification and is valid for at least the same reason as claim 18.

The Office Action also rejected claim 18 for the use of the term “substantial quantities”. Applicants have amended claim 18 to eliminate that term and have replaced it with “greater than 40% by volume”. Accordingly, Applicants respectfully request that the rejections of claims 18-24 and 26-52 under § 112, 2nd paragraph be withdrawn and claims 18-24 and 26-53 be allowed as soon as possible.

IV. Rejection of Claims 30-32 and 38-40 Under § 112, 2nd paragraph

The Office Action rejected claims 30-32 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants

regard as the invention. Specifically, the Office Action rejected the claims as unclear because “all isoparaffins with eight carbon atoms are isooctanes by definition”. Office Action, section 10. Similarly the Office Action rejected claims 38-40 as “all isoparaffins with five carbon atoms are isopentanes by definition.” Office Action, section 11.

For claims 38-40 Applicants have amended the claims to recite “isopentane” rather than “isopentanes” in order to clarify that the isomer of n-pentane commonly called “isopentane” (methyl butane) is being cited, rather than the isomer of n-pentane commonly called “neopentane” (dimethylpropane). Isopentane and neopentane are both C5 isoparaffins, but claims 38-40 are not reciting neopentane.

Similarly Applicants have canceled claim 30 and amended claims 31-32 to recite “isooctane” instead of “isooctanes” to clarify that the specific isomer commonly called “isooctane” (2,2,4-trimethylpentane) is referred to in these claims, rather than other C8 isoparaffins.

Accordingly, Applicants respectfully request that the rejections of claims 30-32 and 38-40 under § 112, 2nd paragraph be withdrawn and claims 30-32 and 38-40 be allowed as soon as possible.

V. Rejection of Claims 47-49 Under § 112, 2nd paragraph and § 101

The Office Action rejected claims 47-49 under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Office Action stated that the claims did not set forth any steps involved in the methods/processes. The Office Action also rejects claims 47-49 under § 101 as reciting a use but not setting forth any steps involved in the process. Applicants have amended claims 47-49 to recite that the methods provide the fuel to run the respective engines and devices cited in the claims. Accordingly, Applicants respectfully request that the rejections of claims 47-49 under § 112, 2nd paragraph and § 101 be withdrawn and claims 47-49 be allowed as soon as possible.

VI. Rejection of Claims 18-52 under 35 U.S.C. § 103

The Office Action rejected claims 18-48 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of Cantwell. The Office Action rejected claim 49 under 35 U.S.C. § 103(a) as being unpatentable over Schoppe in view of Cantwell in further view of Hsu. Claims 19-24 and 26-49 are dependent directly or indirectly on claim 18. Claim 25 has been canceled.

Claim 18 recites a fuel for feeding spark ignition engines, in particular those fitted in aircraft, having an F4 octane number at least equal to 130 and a reduced level of aromatic compounds. The fuel contains substantial quantities of a first hydrocarbons base (B1) essentially constituted by isoparaffins comprising 6 to 9 carbon atoms. The level of isooctanes in the isoparaffinic hydrocarbons cut (B1) is greater than 70% by mass. The fuel also contains a second hydrocarbons base (B2) also constituted by isoparaffins comprising 4 or 5 carbon atoms and, optionally, by other hydrocarbons and additives customary for this type of fuel, in a quantity and quality sufficient for the fuel to comply with the specifications in force. The fuel also contains at least 5.0% by volume of a hydrocarbons base (B3) essentially composed of cycloparaffins comprising 6 to 8 carbon atoms. The ratio R of the quantities by volume $(B1+B2)/B3$ is greater than 2.0.

Applicants have amended claim 18 to include the limitations of claims 24 and 42. The Office Action does not reject these claims on any common set of references. Accordingly Applicants respectfully submit that claim 18 cannot be rejected on any of the provided grounds. Furthermore, Applicants respectfully submit that the cited references teach away from combination and thus cannot be validly combined to provide new grounds of rejection.

Schoppe discloses aviation gasoline comprising more than 50% isooctane. To obtain fuels having a very high supercharge rating, Schoppe advises using C7-C11 aromatics. *See*, Schoppe col. 3, lines 3-7. Schoppe does not disclose the use of cycloparaffins, as the Office Action conceded.

Henderson discloses gasoline compositions dedicated to automobiles. The gasoline compositions comprise dialkylethers up to 50% by volume, naphthenics in an amount of 2 to

25 vol% and aromatics in an amount of from 15 to 75 vol%. *See*, Henderson, claim 1. Applicants submit that naphthenics are cycloalkanes with one or more cycles. Generally when naphthenics result from hydrogenation of aromatics they may contain more than one cycle since aromatics typically comprise polyaromatics. Henderson does not disclose naphthenics that have 6 to 8 carbon atoms. Henderson discloses the addition of an ether to gasoline (ethers are used in gasoline, see the well known addition of MTBE - Methyl-TertButylEther), rather than with the composition of the gasoline base (comprised of naphthenics and aromatics). Further, Henderson is directed to the specific effect of the ether in an aromatics gasoline. *See*, Henderson, col. 4, lines 34-37. This is also recognized at col.5, lines 14-19 (as cited by the Office Action) which recites a “aromatic base gasoline”. The present invention is based on the use of isoparaffins B1 and B2, which are mixed with C6-C8 cycloparaffins (B3), which allows reducing the aromatics content. See the application at page 4, lines 27-28, 30-31, 37. Reduction in aromatics is one primary goal of the invention.

Schoppe and Henderson, either alone or in combination, cannot provide the invention. While Henderson discloses gasoline compositions comprising naphthenics, the exact nature of the latter is not disclosed and in any event the aromatics content is at least 15% by volume. Henderson recites that “[a]t least about 15% by volume aromatics should be present to obtain the benefit from the naphthenes.” Henderson, col. 5, line 41-43. Hence, both Schoppe and Henderson will provide a high aromatics content gasoline. In contrast, claim 18 recites that the level of aromatic compounds of the fuel is less than 10% by volume.

The Office Action that:

“it would have been obvious to substitute a third base (B3) of cycloparaffins, esp. cycloC6, in an amount of up to 20%, as taught by Henderson, for a portion of the isoparaffinic base (B1) in Schoppe to arrive at a composition within the scope of claim 18.” Office Action, section 21.

Applicants respectfully submit that the Office Action's finding is in error for at least the following two reasons. *First*, "when combining references, care should be taken that the proposed modification cannot render the prior art unsatisfactory for its intended purpose" MPEP § 2143.01. Here, Henderson has a teaching that is limited to the addition of ether in an aromatics containing gasoline. Addition of cycloparaffins (naphthenics) in Henderson is only considered in the framework of a gasoline with aromatics content above 15%. Accordingly, modifying Henderson to provide claim 18 of the present application would render Henderson unsuitable for its intended purpose.

Second, when Schoppe considers a further base to be blended, it comprises xylenes. The preferred composition in Schoppe comprises 67% isooctane, 18% xylene, 12% isopentane, 3% isobutene. Therefore, "replacing" part of the Schoppe as suggested by the Office Action still requires aromatics in a substantial amount. This is even acknowledged by the Office Action in the statement that the base will comprise 15% xylene (see items 21 and 24 at page 9 of the office action). Accordingly, Applicants respectfully submit that given the limitation to aromatics below 10% in claim 18, the hindsight combination of Schoppe and Henderson are invalid.

As to the rejection of claim 18 in view of Schoppe and Marschner, Applicants respectfully submit that one of ordinary skill in the art would not find it obvious to replace the xylene in Schoppe with 1,1,2-trimethylcyclopropane in Marschner in this way. Xylene and 1,1,2-trimethylcyclopropane have different physical properties from each other, and these properties are not identical at various different temperatures. The components of the fuel in Schoppe could interact differently with xylene than with 1,1,2-trimethylcyclopropane in ways other than those suggested by the Office Action. Accordingly, Applicants respectfully submit that a person of ordinary skill in the art would not make a blind substitution of one component for the other, particularly in a fuel intended for aviation in which the consequences of an error due to an unforeseen difference in the properties of the fuel components in combination could be disastrous.

However, in the interest of expedited prosecution, Applicants have amended claim 18 to include the limitations of claim 24, that B3 is essentially comprised of cyclohexane. As neither Schoppe nor Marschner discloses a fuel with this limitation (which is presumably why the Office Action did not include the previous claim 24 in the rejection on these grounds), Applicants respectfully submit that claim 18 is valid over Schoppe and Marschner for at least the reasons provided above.

Accordingly, Applicants respectfully submit that the cited reference does not render claim 18 unpatentable. As claims 19-24 and 26-52 are dependent directly or indirectly on claim 18 (or are methods of using the fuel recited in claim 18), Applicants respectfully submit that claims 19-24 and 26-49 are patentable over the cited reference for at least the reasons that were discussed above for claim 18. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the § 103 rejections of claims 18-24 and 26-49.

VII. Rescission of any Prior Disclaimers and Request to Revisit Art

Applicants do not surrender any equivalents to any amended limitation or elements of any claim. In reviewing the claims that are submitted with this Amendment, Applicants respectfully request that the Examiner review each particular claim in this application on its own without reference to past or future amendments to and arguments in support of unrelated claims in this application. For a particular claim, unrelated claims are claims that are not in the same claim set as the particular claim. A claim set includes only the claims that depend directly or indirectly from one independent claim as well as the independent claim itself. Moreover, in reviewing the claims that are submitted with this Amendment, Applicants respectfully request that the Examiner review each particular claim in this application on its own without reference to past or future claim amendments and arguments in any application related to this application. Furthermore, in reviewing any amended claim that was previously amended, Applicants request that the Examiner disregard prior

amendments to the claim that have been removed in this Amendment or substantially modified in this amendment so as to effectively remove these prior amendments. Accordingly, any prior art listed or referenced in this or any parent applications may need to be re-visited.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that all the claims, namely claims 18-23, 26, 29, 31, 32, 34-41, and 43-53, are in condition for allowance. Reconsideration of the rejections is requested. Allowance is earnestly solicited at the earliest possible date.

Applicants have submitted all known required fees and petitions. Accordingly, Applicants believe that no additional fees, petitions for extensions of time, other petitions, and/or other forms of relief are required for the submission of this Amendment and Response. However, in the unlikely event that the Commissioner determines that additional fees, petitions for extensions of time, other petitions, and/or other forms of relief are required, Applicants hereby make such petitions as are required, request such extensions of time and other forms of relief as are required, and authorize the Commissioner to charge the cost of such petitions for extensions of time, other petitions, and/or other forms of relief to **Deposit Account No. 50-3804** referencing **CABH.P0004**.

Respectfully Submitted,

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Date

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